

WHAT IS CLAIMED IS:

- Sub B3
cont
1. A color imaging apparatus comprising:
 - a solid-state image sensor having photosensors color-coded with three primary color filters formed like a matrix correspondingly to pixels of the solid-state image sensor, to provide three primary color signals acquired as captured image signals;
 - a four-channel signal detecting means for detecting, from the three primary color signals provided from the solid-state image sensor, an R signal acquired from R pixels in a horizontal line of R, G, R, G, ..., R and G color filters, a Gr signal acquired from the G pixels in the same horizontal line, a Gb signal acquired from G pixels in a horizontal line of G, B, G, B, ..., G and B color filters, and a B signal acquired from the B pixels in the same horizontal line;
 - a four-channel variable-gain amplifying means whose channels are controllable in gain independently of one another to amplify the R, Gr, Gb and B signals; and
 - a gain controlling means for controlling, based on an output from the signal detecting means, the gain of each channel of the variable-gain amplifying means so that the R, Gr, Gb and B signals amplified by the variable-gain amplifying means are equal in level to one another for an achromatic color image.
 2. The apparatus as set forth in Claim 1, wherein the gain controlling means compensates, based on the output from the signal detecting means, the gains of the

channels for the Gr and Gb signals with pre-calculated fixed compensation factors.

3. The apparatus as set forth in Claim 1, wherein the gain controlling means detects, based on the output from the signal detecting means, an amplitude difference between the Gr and Gb signals, calculates compensation factors from the amplitude difference, and compensates the gains of the channels for the Gr and Gb signals with the compensation factors.

4. The apparatus as set forth in Claim 1, wherein the solid-state image sensor is a CCD.

5. The apparatus as set forth in Claim 1, wherein the captured image signal from the solid-state image sensor is extracted via a sample & hold circuit and AGC circuit, and then subjected to A/D conversion.

6. A color imaging method comprising the steps of:

detecting, from the three primary color signals provided from the solid-state image sensor having photosensors color-coded with three primary color filters formed like a matrix correspondingly to pixels of the solid-state image sensor, an R signal acquired from R pixels in a horizontal line of R, G, R, G, ..., R and G color filters, a Gr signal acquired from the G pixels in the same horizontal line, a Gb signal acquired from G pixels in a horizontal line of G, B, G, B, ..., G and B color filters, and a B signal acquired from the B pixels in the same horizontal line;

amplifying the R, Gr, Gb and B signals by a four-channel variable-gain amplifying means whose channels are controllable in gain independently of each

other; and

controlling, by a gain controlling means, based on an output from the signal detecting means, the gain of each channel of the variable-gain amplifying means so that the R, Gr, Gb and B signals amplified by the variable-gain amplifying means are equal in level to one another for an achromatic color image.

7. The method as set forth in Claim 6, wherein at the gain controlling step based on the output from the signal detecting means, the gains of the channels for the Gr and Gb signals are compensated with pre-calculated fixed compensation factors.

8. ^{method} The ~~apparatus~~ as set forth in Claim 6, wherein at the gain controlling step, based on the output from the signal detecting means, an amplitude difference between the Gr and Gb signals is detected, compensation factors are calculated from the amplitude difference, and the gains of the channels for the Gr and Gb signals are compensated with the compensation factors.

9. ^{method} The ~~apparatus~~ as set forth in Claim 6, wherein the solid-state image sensor is a CCD.

10. ^{method} The ~~apparatus~~ as set forth in Claim 6, further comprising the step of extracting the captured image signal from the solid-state image sensor via a sample & hold circuit and AGC circuit, and then effecting A/D conversion of the captured image signal.